



RABR Analysis - Rating Degrees of Openness in Experimental Repertory

Bergstrøm-Nielsen, Carl

Publication date:
2017

Document Version
Early version, also known as pre-print

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Bergstrøm-Nielsen, C. (2017, Nov). RABR Analysis - Rating Degrees of Openness in Experimental Repertory.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

RABR ANALYSIS - RATING DEGREES OF OPENNESS IN EXPERIMENTAL REPERTORY

by Carl Bergstroem-Nielsen

Summary: "Openness" in experimental music is an imprecise notion. Works may be characterised according to Random Access and Broadness. The first describes whether, and how much, elements may be played independently of a fixed sequence. The second, how much latitude can exist in the interpretation of individual elements, if they can be discerned. Analysis of works by Chr. Wolff, Shiba Tetsu, Haubenstock-Ramati, Stockhausen, Peter Schuback, Henrik Ehlund Rasmussen and Miles Davis exemplify different degrees, and combinations, of RA and BR. Even though a number of works may be "flexible" in ways that fall outside the scope of this method, it is hoped that it can contribute to an easier, and more differentiated, overview of the repertory in question.

INTRODUCTION

Experimental music since 1945 has brought forward a vast and still growing repertory in which the standardisation of traditional music writing has been abandoned in favour of different and individual ways to notate. In many cases, improvisation becomes a vital part of its performance practise. Overviewing this repertory can appear difficult. Not only do traditional notions of "difficulty" and "style" not readily apply, moreover, it may be hard to find common denominators at all for comparing works. RABR analysis aims at making it easier. It deals with works being open for improvisation, in a broad sense of the word, and for decision-making during the performance.

As a musician and composer I have had opportunities since 1971 to immerse myself in such repertory, to practise it on a daily basis, to contribute to it, to discuss it, to exchange with colleagues and to discover ever new works and ideas (published, internet, unpublished) . This experience has been further solidified in my research, which includes an annotated bibliography with summaries of texts on improvisation, related composition and new notations¹. My personal archive of open compositions includes slightly more than 200 authors.

This investigation will present the RABR method by explaining its basic ideas and by stating a number of analysis. These will comprise both works that seem very well apt for this kind of analysis, as well as borderline cases. Possible benefits, limitations and perspectives will then be discussed.

¹ See Bergstroem-Nielsen (2002ffA) and (2002ffB)

THE RABR (RANDOM ACCESS / BROADNESS ANALYSIS) METHOD, BACKGROUND AND CONTEXT

The method departs from the simple observation that words like "openness", "freedom of interpretation", "ambiguity" mean not just one, but several things, and they can vary independently of each other.

Openness regarding the order of elements could be related to what I will term the degree of *Random Access*, a notion stemming from computer science. If there is complete random access, every element can be accessed independently of the other - a book can, for example, be flipped open anywhere. By contrast, a scroll, as used in ancient times, has to be accessed in a sequential way, unrolling it from the beginning. Random Access can be found in arranging of concert programmes - works are put side by side ad libitum. Radio practise may be more libertarian: in non-stop programmes with classical music individual movements mix freely, suspending the unity of the original works. This is RA applied to programming, but not to performance - because there would probably not be any decision-making in real time during the concert or airplay. A more performance-oriented example is the colloquial singing of songs using a common songbook. Participants may, by spontaneous associations, suggest a song they would like to sing as the next, as I have experienced it with friends. Exactly the spontaneity in letting the next song "pop up" seems to be important here. This can be so even if the songbook is a little one for the occasion and one is likely to have sung them all or nearly all by the end of the singing session - then it might still not be satisfactory for most participants just to start on page one and proceed ahead.

The other dimension of openness I have named *Broadness*. Broadness in interpretation of musical elements means latitude in interpretation and could include the free variations on the melody made in jazz solos, how themes are played in individual ways, and within classical music it is also found, although more confined in current practise, concerning for example tempo, phrasing and in some cases embellishments. The cadenza in solo concerts was originally a place for free, virtuosic improvisation related to the material of the surrounding movement. These are probably the more well-known kinds of musical openness.

Now turning to experimental music, aleatoric procedures and indeterminacy are well-known and influential approaches, and were especially prominent in the fifties and sixties. *Aleatoric procedures* represent a RA principle - there is randomness as well as a fixed range of possibilities², and notably this is often unfolded in performance, rather than before. The ideas of *indeterminacy* such as primarily known from John Cage may lead to openness during performance but not necessarily - the aesthetic attitude may prevail over the performance aspect³. These tendencies did break away with previous aesthetic notions and helped pave the way for a new performance practise involving improvisation, even though ideas of openness in

² Cf. the fact that "alea" means dice in latin. "Aleatorisch (von alea=Würfel) nennt man Vorgänge, deren Verlauf im groben festliegt, im einzelnen aber vom Zufall abhängt", a classical definition in Meyer-Eppler (1955), p.22.

³ "Indeterminacy refers to musical material that is unpredictable before a performance. The term is also used for music that is predictable before performance but was composed through chance operations...", Childs (1974), p.336.

performance and improvisation, where present, are certainly characterised by "heterogenousness"⁴ when comparing the various American and European representatives. However, the existence of openness in performance in a number of experimental works has generally been noted in music history books, and improvisation as part of a new kind of performance practise in its own right begins to shine through in some cases⁵. I will use the term improvisation in a broad sense, as the examples will show. However, as I understand it, it must imply some exercise of the performer's conscious responsibility through choices made *during performance*, not only before, even if new kinds of notations are interpreted and even if there are collective preparing procedures⁶ - notwithstanding the possible far-reaching importance of these procedures.

Philosophical and aesthetic notions have developed around experimental artistic creation after 1945. Umberto Eco interprets the situation as being derived from an acceptance of modern science, having as a consequence a "devolution of intellectual authority to personal decision, choice, and social context"⁷. Works appear so to speak "unfinished" (p.169), since "there is a tendency to see every execution of the work...as divorced from its ultimate definition. Every performance *explains* the composition, but does not *exhaust* it. (p.171)". - Different, maybe complementary views to this, are offered by John Cage's Zen-inspired philosophy about the significance of the single moment (leading to negation of the importance of logical continuity) and the "momentform" aesthetic of Stockhausen⁸.

Artistic creation, very generally seen, implies some "freedom", that is, some degree of openness and ambiguity at a general level, besides exercise of craft - both for composition and in performance⁹. However, the recent openness in performance can be seen as something more, an essential historical innovation - the rediscovery of improvisation. In this case, the "content" or "message" of the performance will not consist exclusively in what the composer previously wished to "say" but will be given its shape in performance, directly addressed by performers to the situation and those present to listen.

Even if the notation is new, a work could still appear fixed for the performer. Maybe many detailed

⁴ Feisst (1997), p.0, Index -: "Die Heterogenität des Begriffes Improvisation bei Cage, Boulez und Stockhausen" und "Begriff und Sache der Improvisation im Kontext".

⁵ Written as early as 1975, Brindle (1986) features chapters about "Improvisation - Graphic Scores - Text Scores" as well as "Notation". Bosseur (1999) has one about "vers la creation collective". Sutherland (1994) has a sub-chapter about "Improvised music". Schwartz and Godfrey (1993) look at performance aspects in their own right in "New views of Performance: Space, Ritual and Play" in addition to also dealing with "Notation, Improvisation, and Composition". Cox (2004) takes up the classic concept of "open work" as a heading that includes, among other things, both an excerpt from the influential Eco (1986 - written 1962) and one about composer John Zorn's game pieces. The inclusion of Zorn reflects the fact that his contributions to open composition have been influential - see the category G.2.3 in Bergström-Nielsen (2002ffA and B) with presently 14 entries.

⁶ A number of works by John Cage exemplify this, as for instance the Variations series and Fontana Mix. Porfiriadis (2016) is an elaborate analysis of decision processes in open form music, written by a composer specialising in this.

⁷ Quoted from Cox et al. (2004), p.170.

⁸ See Cage (1969) and Stockhausen (1963)

⁹ "Freedom of interpretation" exists also within "fixed" notation. Jahn (2006) discusses whether the free spaces in music, including traditionally notated, are "paradises" or just excuses for "sloppiness".

instructions must be obeyed, maybe there is simply "hard work" requiring all of the performer's concentration. On such a background, Fell (1998) coined the notion of "*invasive*" contra "*non-invasive*" compositional procedures. But even though these notions have a psychological basis, the judgement being possibly different if made by different performers, there is an objective side to the openness as well, based on the amount of tasks to do and their complexity. Gresser (2010 p.194) goes further to present such a classification of co-creator performers:

structuring co-creator (puts defined elements into an order)

improvisatory co-creator (determines details)

creative co-creator ("neither the structure nor the sonic ideas are determined absolutely by the notation")

This is an interesting classification, based on performance criteria, even if one could remark that the word "improvisatory" appears in a somewhat narrow sense. The RABR analysis developed here has a similar aim but attempts go into more detail.

For both RA and BR, these scales from 0 to 4 will be used in the following:

0: no or almost to no degree (traditional as well as proportional¹⁰ notation will be placed here)

1: to a small extent

2: medium

3: to a large, but not maximum, extent

4: to a maximum, or almost maximum degree

The RABR rating is written this way: RABR [x,y] where x and y are integers from 0 to 4. RABR [4,1] for example thus means maximum degree of Random Access, very slight degree of Broadness (but not zero).

IMPROVISATION IN EXPERIMENTAL WORKS - A GALLERY OF EXAMPLES

From the investigation to follow I hope to show how this method of rating creates a differentiated overview of a large repertory of experimental compositions. And also to uncover limits: which kinds of works do not fit in?

Works have been selected with a view to show varied combinations of rating, to include a diversity of new

¹⁰ By proportional or optical notation I mean letting space on a time-line represent measured time. There is an element of estimating for the performer, but as I see it not amounting to a co-creative function in the context discussed here.

notations and to include some well-known ones.

RA ratings can only take place with works having discernable, separate elements - where the whole has undergone what could be termed a segmentation from the composers' side. The gallery focuses primarily on complex examples having both dimensions¹¹.

CHRISTIAN WOLFF: FOR 1, 2 OR 3 PEOPLE

This belongs to the group of pieces by Wolff known for being based on cue systems¹² and was published 1964.¹³ No limits of instruments/voices are stated, but from the notation and the explanations it becomes evident that the ability to read and execute given pitches is crucial. In other words, the piece could be said to be for melody instruments played by classically trained musicians. As the title says, 2 or 3 could play, or it could be solo. Duration may vary greatly, from less than a minute upwards ad libitum. There are 10 numbered pages to play from and two pages with explanations.

There is freedom of choice as to how much to play and in which sequence. One must play one page at a time, but in any order. Within each page, what is there may be played "in any convenient sequence" and distributed between players "in any way" (with one page as an exception).

¹¹ The common genre of graphic notations presenting themselves as integral pictures and in a number of cases with a maximum degree of BR, are not exemplified here, notwithstanding its general importance. To be sure - with a work having an explanation of symbols and maybe some further remarks, a more complex situation with both dimensions could easily emerge.

¹² Cf. the title of Gronemeyer et al. (1998). Comparable works can be found as early as Duo for Pianists I and II from 1957. "For Five or Ten Players" (1962) is, as Wolff notes "my first attempt at writing for unspecified instruments in variable numbers" (p. 490). Judging from the collection of program notes in this publication, the last work employing cues extensively might be Pairs from 1968. The program note for the piece in question begins with "This music is drawn from the interaction of the people playing it. It requires for its performance independent self-discipline (unpoliced by a score defining fixed relationships and timings) and a capacity and special alertness for responding to what one's fellow performers are doing..." (p.492). Here, we are at the heart of the matter concerning re-inventing music as interaction, not as a sequence, a "story", having been determined beforehand. RA is a necessary consequence of this.

¹³ Some good and fairly extensive treatments of pieces by Wolff dealing with indeterminacy in performance can be found in Nyman (1999) pp.66-69, Feisst (1997) pp.63-69 and Sutherland (1994) pp.145-146.

I

FOR 1, 2 OR 3 PEOPLE

CHRISTIAN WOLFF

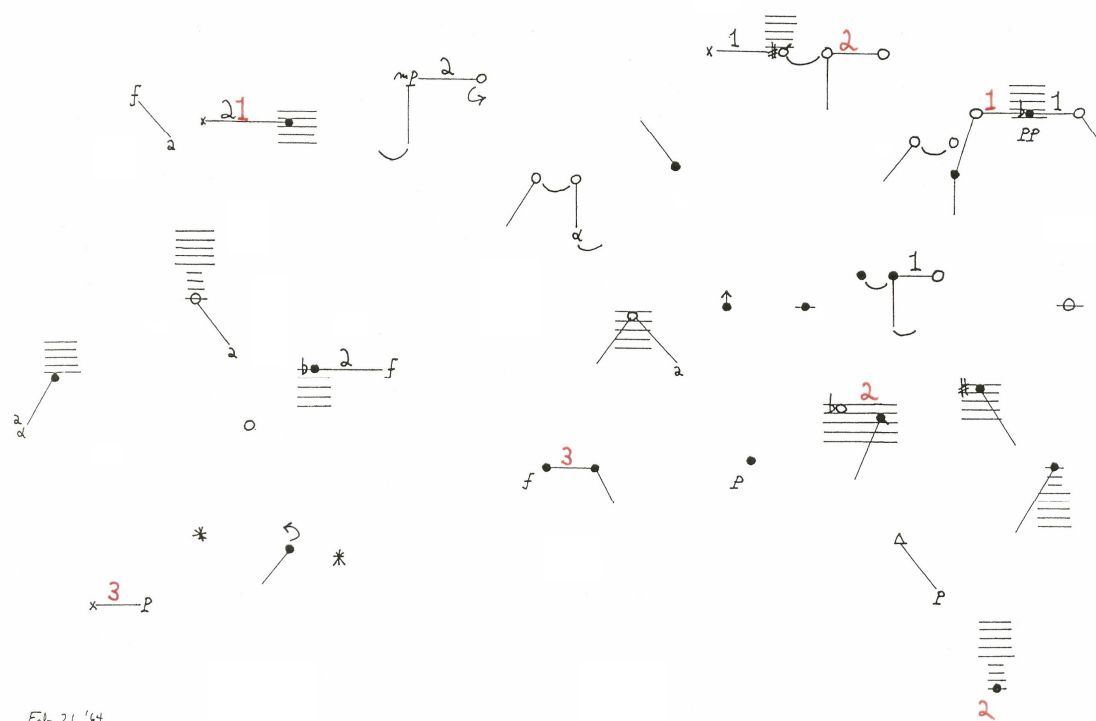


Fig.01. Page I from Wolff: For 1, 2 or 3 people. ©1964 by C.F. Peters Corporation. Reproduced by kind permission of Peters Edition Limited, London.

To give an idea of how the playing is to proceed, look at Fig.01. Assume that you are one of the players and start from the beginning (upper left at the "f" letter). One or two other players is playing at the same time, independently much of the time. For solo, special rules apply. There is first a "f" letter, meaning that the player is to "assume a note to go with it" (this could mean freely choose one) or assign it to any note given on the page. Having played this first sound, then the end of it should coincide with the beginning of the second sound heard after its start (produced by the other player) - this is indicated by the diagonal line and the number at the end of it. It seems this aspect must be taken into account before starting the first sound - it has to last long enough for two new sounds to happen. Next, an "x" sound is to played - x means "anything" and it leads to a black note. The duration of black notes is "variously short, up to about one second". Pitches are to be read either with bass or treble clef, and in case they are not playable they are to be transposed at least two octaves. The tone must be transformed on its way: two kinds of "changes of some aspect(s) of the sound before reaching the next note". The red number one indicates that there must additionally be one change of the timbre. - There is now a white space on the paper, and although no mention is made of breaks and how freely they can be applied, it might invite one. In what seems to be the following group on the page, there is a mp note, which has started after a previous sound has begun and which must be held until the other sound stops. Then, after two transformations of the sound one arrives at

a white note (of any length). The turning arrow indicates that there must be a change of direction in space of the sound (portable instruments could be moved...for pianists for example, there would be a challenge to be thought over and solved). Instructions do not specify what it means when elements are placed higher and lower in relation to each other on a page. Whatever interpretation it may receive or not, next come two white notes which however is to be read as one. It must start directly after a preceding one as the diagonal line leading to it shows, and the second one must be coordinated with the start of another sound. The vertical line ending with a sign having an arc underneath it indicates that this sound must come from another player (certain options, with use of own sounds or environmental ones do not apply here). - Next "group" of signs situated somewhat up the page is one short sound directly after a preceding one.

The above section described a sample of around one fifth of the first page. There are more signs and combinations than those mentioned here, but they have in common the use of conglomerates of individual sounds or tones. The player must respond to up to several demands at the same time concerning the individual sounds, their relation to each other and their relation to other sounds that can be heard. Players have to pay much attention to details and often coordinate precisely with each other.

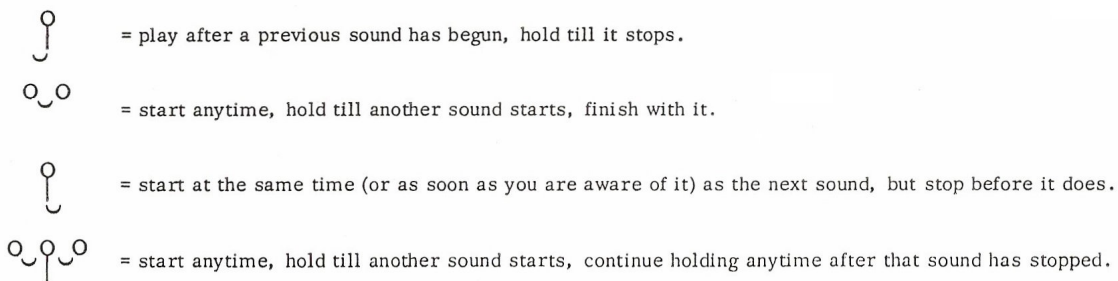


Fig.02. Wolff: *For 1, 2 or 3 people*, detail from page 1 of *Instructions*. ©1964 by C.F. Peters Corporation. Reproduced by kind permission of Peters Edition Limited, London.

A few more signs can be seen from the excerpt in Fig.02, concerning coordination. One additional sign belonging to this kind can be mentioned, a line broken by a number followed by a colon and a zero - like in Fig.03. The number before the colon indicates the number of seconds of silence to be inserted before the required coordination (and the red number one indicates one change of timbre from the previous note).

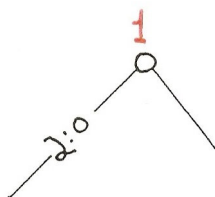


Fig.03. Wolff: *For 1, 2 or 3 people*, detail from page IV. ©1964 by C.F. Peters Corporation. Reproduced by kind permission of Peters Edition Limited, London.

RABR assessment: There is no unambiguous segmentation of contents from the side of the composer beyond dividing into pages, although the composer presupposes a RA procedure by allowing for playing the contents "in any convenient sequence". Seemingly there are groups of signs belonging together, judging from the visual impression, but it is not clear exactly what belongs together. However, as some detailed reading reveals, there are sounds having to follow each other closely. These small groups of signs cannot be divided further - they can, consequently, be considered the smallest possible units. The extensive freedom to play the material in any sequence does not necessarily apply to performance but could well be taken to mean that creating a fixed version beforehand is allowed. "Any convenient sequence" within a page could, however, also mean that choice can be made during performance, and also that one could change page at will. But as this does not have to happen, we have to say that two possibilities are open: no performance RA at all, or RA ad libitum according to the performers' decisions. In the interest of mapping possibilities, I will choose a maximum RA rating here.

Two features seem to characterise the Broadness of elements to be played. On one hand, sounds are defined in a general and approximate way. Durations, when indicated, are either "short, up to about one second" or "any length". Pitches, where indicated, may be read in several clefs. "Anything" is not fixed at all - unless limited by possible demands to sustain it. These Broadnesses exist on the level of details. But rules change fast, almost for every sound, the system is complicated and several instructions may have to be obeyed at the same time. Comparing to works in traditional notation one may say this is in practise no less detailed. On the level of details choices are possible, but reading, obeying instructions and reacting to circumstances will probably dominate the players' attention, even being trained in playing the piece. This seems comparable to the way in which the musician traditionally has freedom how to do some details of tempo, dynamics and phrasing. It does not seem to leave room for improvisation in the sense in which the improviser develops his or her own inspiration with some continuity. Thus it is akin to the traditional sight-reading procedure, although producing a different kind of music¹⁴. So I will rate the BR value to be "no or almost to no degree", knowing it could be disputed - it could, among other things also depend on how well you know the piece.

On this background, I rate the work as RABR [4,0] (Maximum Random Access, minimum Broadness).

¹⁴ While written-down improvisations can "kill" the improvised aspect (like a dried plant!) by preserving the sounds only, this way of composition preserves the unpredictable situation, being based on communication, not of patterns of pitches and metrical values. It might be an excellent exercise for classical musicians to approach improvisation.

KARLHEINZ STOCKHAUSEN: CONNECTION

Connection from 1968 is one of the 15 pieces constituting the collection *From the Seven Days* (Aus den Sieben Tagen). It belongs to a "family" of pieces taking metaphorical issue with the the cosmic perspective and gamuts of units of very different order. The units are, however, arranged within a continuum, with direct inspiration from serial composition.¹⁵ Fig.04 quotes the entire piece as it appears in the collection.

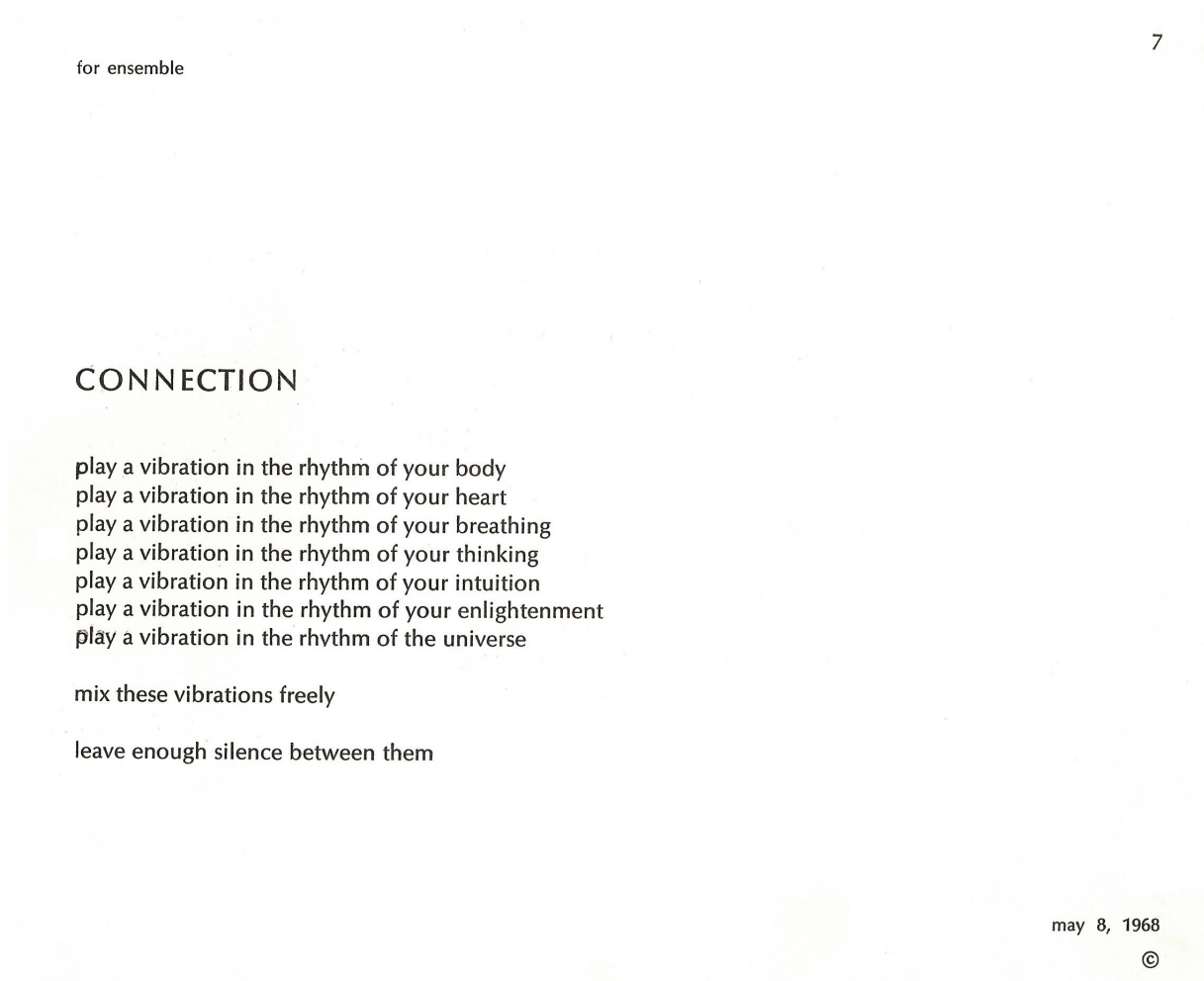


Fig. 04. Karlheinz Stockhausen: "Connection" from "From the Seven Days". © Copyright 1968 by Universal Edition A.G., Wien/UE 14790. English version © Copyright 1970 by Universal Edition A.G., Wien.

How the piece proceeds should be apparent from the score. Everyone starts together by playing the first line. They continue, maybe at individual paces, in which case a spreading out must be expected. After this "exposition", there is a mixed situation the rest of the time.

¹⁵ The other "family members" being *Night Music*, *Downwards*, *Upwards* and *Communion* from *From the Seven Days*, according to the present author. The serial design is discussed in Kohl (1981) and Blumröder (1993). There is one more text notated collection, *For Times to Come*. For an analysis of all 31 pieces in both collections, see Bergstrøm-Nielsen (1998) or the translated and shortened versions, Bergstroem-Nielsen (1997) and (2006).

We may consider the Broadness issue first: how can a musician render "the rhythm of your body" and all the others? Apart from "rhythm of your breathing" all elements seem to have almost unlimited interpretation possibilities. However, a "spelling out" of the contents must take place, in the sense of a differentiation process, because musicians have to make the elements different and also to remember their characters so that they can be picked up again. In fact, there is a substantial amount of concentrated work to be done to achieve this - very different from the situation in which "anything goes". And as a consequence for the sounding result, certain musical characters will occur and re-occur - in another word, there will be stylisation. Still, instructions do not dictate any details¹⁶.

Regarding Random Access, the sentence "mix these elements in free sequence" clearly states just this very principle for the second part of the piece. The first part is, of course, sequence-bound even if heterophony can easily occur - that does not affect the fact that it is produced by adding strict sequences.

RABR assessment: RA prevails in pure form in the second part but not at all in the first, so value is set to medium. BR is rated, despite the individual work demanded, at a high value since the musicians themselves set the limits and have plenty of time to unfold their ideas as well as the liberty to modify them along the way. It is, however, not maximum, since characters must fit the self-imposed ideas. Therefore I will place the work at RABR [2,3]

¹⁶ Stockhausen reports of a discussion with the pianist Alois Kontarsky who played in his ensemble. "Rhythm of the universe" did not make sense to him, but discussing the matter together, thinking of star constellations and interval constellations in Webern's music turned out to be excellent inspirations. See Maconie (1976) and (1989) p. 254 and 118f. In Maconie (1989) p.117f a similar story from Stockhausen, talking about a 1968 composers' seminar in Darmstadt is mentioned. Participants did not know how to realise "play a vibration in the rhythm of your thinking" and Stockhausen then did an exercise: with closed eyes, tapping with a pencil each time their thinking changed direction. - Finally, Stockhausen's program notes for the published recording (1973) provides a general introduction to such work going into further details - see Stockhausen (1978) p.116f.

CHRISTIAN WOLFF: STONES

Stones

Make sounds with stones, draw sounds out of stones, using a number of sizes and kinds (and colors); for the most part discretely; sometimes in rapid sequences. For the most part striking stones with stones, but also stones on other surfaces (inside the open head of a drum, for instance) or other than struck (bowed, for instance, or amplified). Do not break anything.

Fig.05. Wolff: Stones. Frog Peak Edition, shareware.

This is the total score. In the Frog Peak Edition it is stated on one A4 page, with a title and text underneath just like provided in Fig.05. It is composed 1968 and a part of the series *Prose Pieces*, an anthology comprising 15 pieces in all, the last bearing the composition year 1997.¹⁷ The collection was begun with British art students in mind¹⁸.

The formulations "for the most part...sometimes" as well as "for the most part... but also" both specify proportions of quantity: "for the most part" is to appear most frequent whereas "sometimes" as well as "but also" is to happen in fewer cases. How, and when, the shifts are made is left to the individual performers.

The closest alternative I could think of concerning the first one would be quotas, like "90% of discrete sounds - 10% of rapid sequences", or an attempt at inventing symbols suggesting the same thing and arranging them graphically in proportional quantities. However, the verbal means employed appear much simpler, easy to instantly understand and undoubtedly at least as effective.

A simple use of verbal expressions thus appears as a formula capable of describing how different categories of sounds and soundmaking means relate to each other. There are two two-level hierarchies concerning both the texture of sound (discretely or in rapid sequences) and the use of stones on stones versus stones used in other ways. Verbal notation appears to be a more straightforward and simple means to do this than any other notation means.

As the dichotomy "discretely / in rapid sequences" suggests, there are to be distinct elements or sections. But the organisation of this in practise is entirely free, within the priority given of using more time for the

¹⁷ The 1997 piece is not included in the online Frog Peak edition but may be seen in Gronemeyer et al. (1998).

¹⁸ According to the program note in Gronemeyer et al. (1998)

discrete ones. The opposition of stones used alone or together with instruments might, or might not, become the basis for such elements or sections.

RABR assessment: broadly defined elements exist and a hierarchy is to be observed, but within this flexible framework musicians have total freedom to organise the temporal dimension, both how elements follow each other and their durations. Concerning the basic sound material, a certain constraint follows from the demand to use stones, both alone and in combination with instruments, but there are only the gentle further restrictions of how to use this in improvisation mentioned above. On this background, I will place the work at [4,3].

ROMAN HAUBENSTOCK-RAMATI: Interpolation. Mobile pour flute (1,2 et 3).

This piece is copyrighted 1959 but was composed already in 1957, according to Universal Edition (2016). It is subtitled as a "mobile". Haubenstock-Ramati himself coined this notion which has almost become a genre designation for his characteristic way of composing. The notion of "mobile" was inspired from those by the sculptor Calder but has a special intent with this composer. He wished to break away from strict linearity, however retaining a dimension of identity. He viewed this as an employment of the classic variation principle and as a "dynamically closed form"¹⁹. Individual segments could be combined and arranged differently each time such a piece was played, and his works exhibit a multitude of methods to make this possible. They were typically written out with approximate note-values without a meter, but in great detail.

Tous droits réservés
All rights reserved

pour DARMSTADT
et Severino Gazzelloni

INTERPOLATION
MOBILE POUR FLÛTE (1, 2 et 3)

ROMAN HAUBENSTOCK-RAMATI

© Copyright 1959 by Universal Edition (London) Ltd., London
Universal Edition Nr. 13078 LW

Fig.06. Haubenstock-Ramati: *Interpolation* (original size 44 x 30.5 cm). © Copyright 1959 by Universal Edition (London) Ltd., London/UE 13078

Fig.06 shows the whole score without the explanations. They may be summarised like this: one must start and end with two of those elements nearest the left or right side having brackets at their end, followed or preceded by a thick vertical line. "Formants", as the small units are called, may be freely combined, going

¹⁹ Haubenstock-Ramati (1965), p.54.

down- and upwards. Reading direction may be from left to right or "retrograde", backwards. - A version for 1 flute is to take 4-5 minutes. Versions for 2 or 3 flutes may last up to 12 minutes. When there is more than one flute, the procedure with starting and ending as described above must be completed 3 times. Second and especially third time the system of connections between elements is to be abandoned. Instead, formants should be chosen spontaneously and played, in "original" version or retrograded (=backwards), "separated by shorter or longer pauses". Recorded version(s) may be used together with live playing. With several flutes, layers of smaller density ("repetitions" 2 and 3 as described above) must sound simultaneously with a layer of greater density.

Thus we have a labyrinth offering ample choices for the interpreter to choose his or her own way through. Elements themselves, however, are notated in a fixed way. However: if several flutes are employed and after the first round is completed, the playing procedure changes into a completely free choice of elements.

While these appear as basic facts, some details remain ambiguous. This one seems purely a creative challenge: layers of smaller and greater density are to be juxtaposed - but how? It could sound reasonable when Straebel (1997) describes how it could begin as a solo, then become a duo and finally a trio²⁰. But this is maybe not the only option - also taking the possible use of recording into account.

In fact, this work is published with unusually few explanations, compared with later works - other challenges exist on the level of details where one would expect some information. How are fermatas to be different? A cue can be taken from *jeux 6* (1960) for percussionists that features similar types. Some note bars have numbers that are not explained - see Fig.06. Blum in Straebel (1997) proposes that the numbers designate different tempi. Additionally, he raises several other issues concerning these different bars: when one number is played, what about the other and what about the grace-notes? Further, he asserts that "I know that Haubenstock-Ramati has installed these things on purpose, in order that the mobile character really comes about..."²¹

Several things, however, may warn against the assumption that the lack of explanations was intended by the composer, as long as we do not possess a proof of that. First, a number of subsequent works had ample explanations, also concerning minute details of signs²². It could be that a number of details here were left to verbal explanation. This is an early work of his of the mobile type. It is imaginable that with more experience (including the employment as a music editor at Universal Edition starting the year he composed this piece) came a growing realisation that misunderstandings of details in non-traditional works easily

²⁰ Maggi Payne (1999) also follows this principle when she makes two consecutive and accumulating recordings of her live playing.

²¹ Straebel (1997), approx. 20% from the beginning of the article: "Ich weiss, daß Haubenstock-Ramati diese Dinge mit Absicht eingebaut hat, damit der mobile Charakter wirklich entsteht..."

²² For instance, explanations to "*jeux 6*" (1960) for percussionists detailed out 6 different kinds of fermatas as well as possible combinations thereof. In "*multiple 5*" (1965) for wood wind and strings ad lib. two large pages were consumed by explanations of string sounds, and another one dealt with woodwind sounds.

arise and a wish to prevent these as much as possible. Second, consciously introducing some confusion as a provocative compositional strategy is a known strategy - however, it would be exceptional to see it in a European context so early, even before Cage's visit to Darmstadt 1958.

Pragmatically, as in other cases, the interpreter must do his or her best and decide on the background available.

The image displays a detailed musical score for Haubenstock-Ramati's *Interpolation*. It features several staves of music. The top left staff includes dynamic markings like *fff*, *ppp*, and *accel.*, along with a 5:4 ratio. The top right staff has markings for *pizz.*, *ritard.*, *mf*, *f*, and *staccatissimo*. The bottom staff is a long, continuous line with various dynamics including *mp*, *p*, *mf*, and *ff*, and includes a 5:2 ratio. The score is characterized by complex, often polyphonic, notation and frequent use of dynamic extremes.

Fig.07. Haubenstock-Ramati: *Interpolation*, detail. © Copyright 1959 by Universal Edition (London) Ltd., London/UE 13078

The occasional polyphonically notated passages, such as 5:4 to the extreme left in Fig. 07, is a curiosity for this piece and clearly reminiscent of early serialism's practise of going into minute details of durations - thereby, among other things, even expanding the demands placed on the interpreter's reading of rhythm.

The BR "freedoms" within occasional acc. and dim. and when playing grace-notes do not go beyond those of traditional notation. One detail does, however: in the upper left corner there are two tempo indications, each a double one, with oblique arrows separating the two halves of the double. This can be read as offering an ad libitum choice between several tempos, such as "presque lent" and "lent" in the first case.

RABR assessment: both for the first and possible subsequent rounds of playing, BR value remains extremely small. RA values are different for the first and possible subsequent rounds. For the first, RA options appear frequently and varied, however bound to the system of reading continually. For subsequent ones, RA is absolute. In the first case I consider the RA value to be more than just a little - 2, and as the maximum to be employed in the second case is 4, the average is 3. For the BR value, I set it to zero because

the tempo options given in two cases are rather near each other, and this detail appears unimportant seen from the totality, which furthermore contains exact tempo details beyond the traditional and even the necessity of reading backwards. So I place this work at RABR [3,0]²³

²³ This is a high RA value for Haubenstock-Ramati, especially within mobiles. 14 works written from 1959 to 1989 were investigated as a preliminary study. RA range varied between 0 and 3, BR between 0 and 2. He is truly a specialist of RA, and in this field he has invented many new kinds of systematic permutations and "roads" through the different graphics.

PETER SCHUBACK: L'HEURE DU PANURGE for ensemble ad lib.

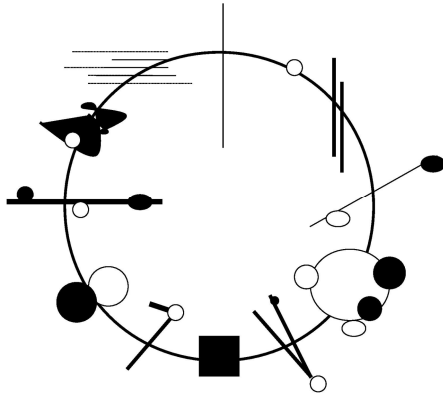


Fig.08. Schuback: L'Heure du Panurge. International Improvised Music Archive, shareware.

The piece consists of 12 different graphic symbols arranged in a circle in a clock-like manner - see Fig. 8. The entire explanation reads:

"The twelve symbols are to be played as short fragments with pauses in between. Musicians choose individually where to start (which "hour" within the clock dial). The order is given, but musicians, 3 or more, do not need to synchronise. Choice of instruments is entirely free. All 12 statements are to be played after another, clockwise.

After the first cycle, that is, starting with the second cycle, one freely chosen fragment is left out for each cycle until there is only one left. Then one fragment is added for each new cycle. When all fragments are played again, that is, after the twenty-fourth cycle, musicians play their last fragment over and over again until all have arrived at the same stage in the process. Then the piece is over."

According to the explanation above, musicians first play cycles consisting of lesser and lesser elements, and having reached only one element, cycles increase until the maximum. Thus the overall impression can be expected to be a subtly decreasing diversity of elements and increasing again. Subtly, because parts are both different and not synchronised, so a variety of elements will be at play anyway. The end will then be marked by a more clearly decreasing diversity when several players repeat one single element.

RABR assessment: one main aspect of RA is the free choice of the first element to play. The leaving out and later adding of elements to the cycle is on a "freely chosen" basis. The easiest way would be to let the leaving out and latter adding take place when starting or ending the cycle, so as to keep track of one's choices by simply counting or remembering the place in the sequence. However, one may opt for complicating it, making more individualised choices each time and taking the effort (and maybe risk) to

remember it. Taking this into account, a certain amount of random access is present most of the time. But even if forcing a maximum of RA out of the system one will much of the time be limited by sequential playing. So RA is, all in all, fairly modest. As to BR: as there is no direction on how to interpret the elements, there is maximum freedom, regardless whether the relatively short duration they are supposed to have may suit or not suit the musician. One might ask whether it is not a limitation of the interpretative openness to demand that elements are repeated later. There is, however, no indication that this must take place within limits, for instance, that the results be recognisable. I place this work at RABR [1,4].

Shiba Tetsu: HAND PIECE (WITH MEMORY FUNCTION) for ensemble ad lib

HAND PIECE (WITH MEMORY FUNCTION)

A. Cues:

1. Hand down --> change music
2. Show 1-3 then indicate head --> memorize music (no change in the music which is played)
3. Show 1-3 then hand down --> recall and play memorized music
4. Show 5 then hand down --> End

B. Rules

- all (non) instruments are OK
- all members can show cue whenever
- on every cue, at the moment when hand down, next music section starts

Notes. Cues start by showing 1, 2 3 or 4 fingers. After the other players have noticed this, in cue number 2, 3 and 4 one more number is given. "Show 1-3" etc. means: show one of the numbers 1, 2 or 3 with corresponding number of fingers. The piece lasts until someone gives the "end" cue.

Fig.9. Tetsu: Hand Piece. International Improvised Music Archive, shareware.

This piece was directly inspired by the game pieces of John Zorn and his activity in Japan in the first half of the nineties. But whereas Zorn could seem to take delight in complicating the rules to a maximum, they are here reduced to a simple minimum.

As can be inferred from the rules stated in their entirety above, the music will consist of a number of sections, each started by a cue and determined by which kind of cue. Cues may result in simply an unspecified change, in a silent memorising of what is played, in a change into a recalled character having been memorised before, or in the piece ending.

RABR assessment: since every player is free to change the music played at every moment into a new section, RA is at a maximum and what happens is immediately hearable. BR is either nearly maximum in the event of unspecific change, or it is ideally zero in the event of one having to make an attempted reproduction of a memorised character. Because versions may imply very different degrees of BR, an average is stated here. On these backgrounds, I rate the piece at RABR [4,2].

HENRIK EHRLAND RASMUSSEN: THE NATURE OF THE NOTES 2

The nature of the notes 2 *For an ensemble of melody instruments*

The musicians must stick to their individually chosen notes!

*Start individually
freely - notes in 2 sec. use very different pitch from the others, and play every note
as an important manifested event*

2 sec. Pause ad lib. 2 sec. etc.

*After approx. 4 min. increase the intensity by making short pauses/breaks
- and gradually play deeper notes until everybody play the deepest they can.
on common agreement - stop playing!*

• *At the right moment start like in the beginning:*

*2 sec. Pause ad lib. 2 sec. etc. - when someone starts playing intervals like
everybody play the same way but individually*

*Pause ad lib. 2 sec. etc. → Stop the piece by playing very
short notes*

*and allow more and more space between the notes -
gradually 20 sec. between the notes at the end*

*Henrik E. Rasmussen
2010*

Fig.10. Henrik Ehland Rasmussen: *The Nature of the Notes 2*. International Improvised Music Archive, shareware.

The illustration shows all of the published piece. As one can see reading the text, there is a development that includes points of synchronisation. They are defined by the statements: "After approx. 4 minutes..." - "At the right moment" and "when someone starts playing intervals like...", and "Stop the piece by... and allow more and more...". The material is reduced to single tones lasting 2 seconds, to combinations thereof and to extremely short notes. They combine with pauses in prescribed ways, and individually fixed pitches only vary after 4 minutes, at which time they gradually become deeper.

There are clear-cut elements, given from the composer as little models to be varied. They change into different ones, but there is no option to jump back and forth between them. Therefore there is no RA.

BR is limited by the reductionism and the obligations in some sections to achieve gradual common changes. However, the compositional framework is not tighter than allowing for improvisation to a higher degree than

just a small one.²⁴

RABR assessment: there is a fixed sequence of sections in which an improvised use of defined elements are to take place. On this background, I rate the work as RABR [0,2].

²⁴ The shifts/transitions are sometimes dependent of context, demanding decisions of what is the "right moment" and when to take initiative to direct the music from single tones to intervals. These decisions have both individual and collective aspects, provided they are performed as was meant, without any single person in charge of triggering the change - see Bergstroem-Nielsen (2008) for a closer description. It can be discussed whether this makes the framework more flexible and thus pushes it slightly more in the direction of broadness in our sense (players are at liberty to finish the section the way they like, without being cut away), or whether it rather makes an additional demand of synchronisation. In any case, however, these conditions are only imposed at certain points (unlike Wollf's 1, 2 or 3 People) and often a relatively relaxed condition for improvisation can be expected.

BORDERLINE CASES

In this chapter, two works will be reviewed that present challenges to the idea of RABR analysis.

MILES DAVIS: So What (1959 and later versions)

The image shows a handwritten musical score for Miles Davis's "So What". The title "SO WHAT" is written in large, bold letters at the top center. To the left of the title, it says "(MOD. JAZZ)". To the right, it says "399. - MILES DAVIS". The score is written on six staves. The first staff is in treble clef and 4/4 time, with a key signature of two flats (B-flat and E-flat). The second staff is in bass clef and 4/4 time, with a key signature of two flats. The third staff is in treble clef and 4/4 time, with a key signature of two flats. The fourth staff is in bass clef and 4/4 time, with a key signature of two flats. The fifth staff is in treble clef and 4/4 time, with a key signature of two flats. The sixth staff is in bass clef and 4/4 time, with a key signature of two flats. The score includes various musical notations such as notes, rests, and accidentals. There are also handwritten annotations: "(BASS LINE ONLY)" on the second staff, "D-7 (TRILL)" on the first staff, "1." and "2." on the third staff, "Eb-7 (DOR.)" on the fourth staff, "D.S. al f" on the fifth staff, and "SOLO ON ENTIRE FORM:" on the sixth staff. The sixth staff also contains a diagram showing the chord progression: D-7 || Eb-7 || D-7, with the numbers 16, 8, and 8 below the respective chords.

Fig.11 Miles Davis: So What, anonymous rendition in a handwriting suggesting *The Real Book*

A well-known evergreen, the work probably exists in innumerable recorded versions including remixes and cover versions. This analysis deals solely with how it was treated by the author and his band members. 5 recordings plus a sheet music version have been taken into consideration for this analysis (Davis 1959a, 1959b, 1964a, 1964b, 2016).

The formal scheme is the same for 1959a and 1959b:

Intro - 8 bars (slow, piano and bass tightly synchronised)

Theme/form - 16 bars (first 8 repeated) over D minor + 8 over E flat minor + 8 bars D minor (ABA)

Solos over entire form without intro

Bass transition 8 bars

Theme again (see above) with fade-out or thinning out extending the last section.

A peculiar feature is the static harmonics, beginning with 16 bars - and if several rounds are played in a solo, there will be 24 bars of D minor in a row.

Constant features found in the recordings:

- All recordings keep faithfully to the 16+8+8 bar harmonic scheme where applicable.
- The instrumental sequence of solos always started with the trumpet of Davis, followed by saxophone(s), then piano - in 1959b with a concluding trumpet solo. Judging from this sample of four recordings, it seems there is a strict hierarchy in which the bandleader can take absolute priority, wind instruments are more important than others and bass as well as drumset receive no solos at all, even though their improvisatory contributions are also important throughout.

Variable features found in the recordings:

- arrangements were changing. 1959b had the piano introduction transcribed for brass band (presumably by the TV programme) - and after that time it was abolished. The bass transition at the end also disappeared. Tempos were faster in the later recordings.
- Durations of solos varied. The live recordings featured longer versions than 1959a and 1959b.
- Solos are always approached as individual creations - there is absolutely no imitation of earlier ones or "accretion", as far as their overall shape and coherence of details concerns.

The sheet music version:

See fig.10 above. It appears to be a stripped-down, simplified model of the piece and it would be advisable to supplement it by listening, which is probably also common usage²⁵. The section based on E flat has a repetition sign which seems to be a direct error.

²⁵ It can be noted that the official website, milesdavis.com, has no references to music writing.

Discussion of openness aspects: the work takes a new shape at each recording. Part of this openness seems to rely on preconception - arrangement and sequence of solos. As there seems to be no spontaneously positioned solos decided during playing, there is no RA aspect (although it could, with other musicians who felt for it, likely appear). Duration of solos could conceivably vary out of the situation in a more direct way and thus be a dimension of BR. And as mentioned above, they strongly appear in contrast to the arranged elements as reserved places for free improvisation. The slow harmonic changes supports this openness.

The endings of the Herbie Hancock piano solos in both 1964 recordings make elegant and surprisingly-sounding gradual transformations of their material into the theme - in two different versions. This demands coordinated support from the others. Exactly this trait appears clearly pre-arranged but does not change the overall impression that even that part of the process was part of a freely flowing improvisation²⁶.

A hierarchy of instruments seems to determine whether the BR degree would be, say, 1 (slight, although indispensable) or 2 (decisively contributing) or maybe even 3 (very much contributing). The degree of virtuosity to easily fulfill the basic requirements of keeping sync with the bar scheme at strategic points also plays a role as to how "free" the musician can be.

As already stated, the object of this analysis was limited to selected recordings from 1959 and 1964 of one work. Other practises may well exist with different authors and at different times, including for how this work is re-performed.

RABR assessment: BR varies with the status of the musician and his/her place in a hierarchy of instruments. I would place the work between RABR [0,1] and RABR [0,3] depending on the musician's place in the hierarchies and on training. For comparisons of RABR gradings, the average of [0,2] can be used with some reservation.

²⁶ There is in any case a process of "landing", that is, arriving at the right place harmonically and metrically after the solo. Here, just a motivic aspect has been added. Cf. the analysis of Wolff and the complexity encountered here.

EARLE BROWN: December 1952 from Folio (1952, publ. 1961)

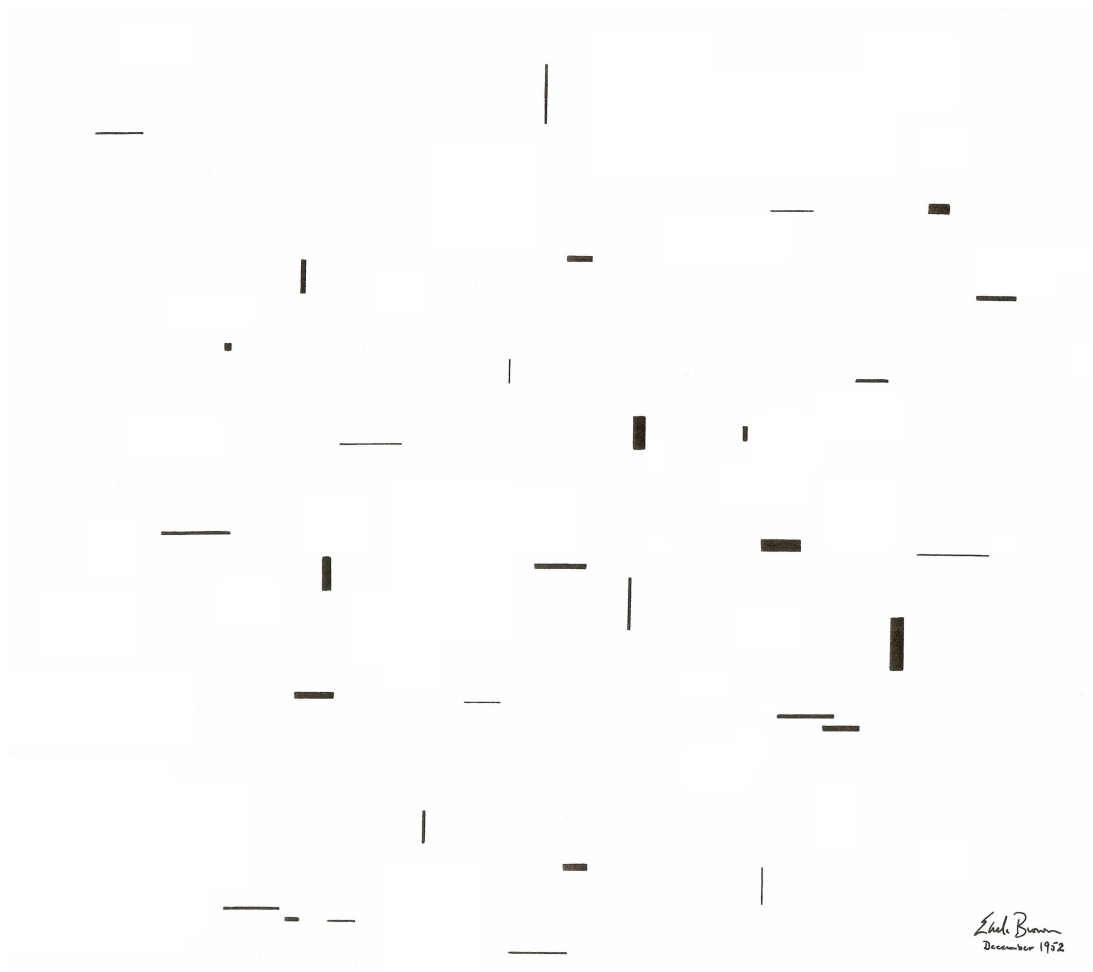


Fig.12 Earle Brown: December 1952 playing score from Folio. Copyright 1961 by Associated Music Publishers.

Among graphic scores, this is in all probability the most cited at all in articles and books.²⁷

The instruction text reads as follows in its entirety:

"The composition may be performed in any direction from any point in the defined space for any length of time and may be performed from any of the four rotational positions in any sequence. In a performance utilizing only three dimensions as active (vertical, horizontal, and time), the thickness of the event indicates the relative intensity and/or (where applicable instrumentally) clusters. Where all four dimensions are active, the relative thickness and length of events are functions of their conceptual position on a plane

²⁷ It seems, however, that earlier a number of writers have not been aware of the instructions in the published edition and have perceived the work as free graphics for any kind of use. With the recent academic interest in experimental music, this picture has changed - see my overview of literature in Bergstroem-Nielsen (2002ffA) and (2002ffB). Storesund (2017) provides a brilliant practical introduction for musicians.

perpendicular to the vertical and horizontal plane of the score. In the latter case all of the characteristics of sound and their relationships to each other are subject to continual transformation and modification. It is primarily intended that performances be made directly from this graphic "implication" (one for each performer) and that no further preliminary defining of the events, other than agreements to total performance time, take place. Further defining of the events is not prohibited however, provided that the imposed determinate system is implicit in the score and in these notes".

This text is preceded by a "note and sketch" describing the composer's vision of a three- or four-dimensional musical space for the performer to move within or to set in motion.

As I understand the instruction, one must in all cases read the picture in a freely chosen, yet systematic manner, letting up and down on the paper correspond to pitch and letting thickness correspond to dynamics, maybe to clusters on keyed instruments. An advanced way would be to imagine the picture or the player in motion so that the relative position of elements to each other change. It is essential that the elements are perceived as single elements which are clearly differentiated from each other according to "vertical, horizontal, and time", and performance should first and foremost take place directly from playing the picture, with only principles, not details, being fixed in advance.

Looking for the RA aspect, which are then the elements one might permute, thinking of a basic two-dimensional version? An amount of analytical activity from the performer is required here. One could simply see each sound as accessible in the RA way. Or maybe lines or rows could be freely chosen along the way. It would also matter whether one allows for choosing one element several times and for leaving out some - albeit, as I understand it, within the "systematic manner". One could also choose a system leaving no RA at all, but in the interest of mapping possibilities, I will consider it to be of medium value.

If more than three dimensions are to be employed, and one wishes to activate the imagined "plane perpendicular to the vertical and horizontal plane of the score" and practise "continual transformation and modification", then it seems one should assume an imaginary axis going into space and decide how to undertake a "journey" through them while reading and performing.

As we can see, much attention to the details and how they relate to each other is required by the instructions. Indiscriminate sound masses have no place here. And as elements are to be carefully weighed so as to balance together with all the others, how much broadness is left for the performer in their interpretation - in other words, how much arbitrariness could be allowed in, say, one single sound? For keyboard instruments, there is some variety of ways one cluster can be realised, for instance, how tight - whether chromatic or other. For melody instruments, this variety does not exist, but even if a somewhat definite placement of pitch, for instance, between "highest" and "lowest", is aimed for, then the actual pitch may be chosen in performance to hit some intervallic combinations rather than others, and there may be several solutions to this - also an element of chance (applying to several dimensions) which can influence subsequent choices. Importantly, the dimension of timbre is not at all mentioned in the instructions. There is an open field here -

timbral variety could be accomplished in traditional ways, for instance by a voice singing different vowels, with bowed string instruments placing their bow differently, or just by alternating instruments. With the considerable developments since the composition year of 1952 in extended techniques and electronics, the field expands further.²⁸ - Considering the last part of the instruction stressing that playing should primarily take place from the graphic score itself, there is in any case a general limit to how fixed versions can be.

If this piece appeared a "borderline case" for the RABR method, it seems to be so because of the openness to, or necessity for, arranging or at least decision-taking before the performance. But if we imagine this as having taken place already, then it emerges that both random access and broadness aspects can exist within certain limits.

RABR assessment: On the background of the above, I rate this work to be RABR [2,2].

SUMMARY OF EXAMPLES WITH SOME ADDITIONAL REMARKS AND OBSERVATIONS

Looking back at the examples treated so far, the table below provides overviews both regarding RA and BR properties, and includes indications of what led to the evaluation in question.

RA descending		BR descending	
GALLERY EXAMPLES		GALLERY EXAMPLES	
[4,3] Wolff: Stones	Texture and soundmaking both have prescriptions one can alternate between ad libitum	[1,4] Schuback: Panurge	Graphic symbols for ad libitum interpretation.
[4,2] Tetsu: Hand Piece	New sections of circumscribed categories can be generated anytime by cueing	[4,3] Wolff: Stones	Strongly ambiguous descriptions of sound textures within a dichotomy.
[4,0] Wolff: For 1,2 or 3 People	Pages can be played in any order and elements can be played in "any convenient sequence"	[2,3] Karlheinz Stockhausen: Connection (Verbindung)	Elements are described ambiguously with verbal means, yet they must be differentiated from each other.

²⁸ Historic considerations taking pointillistic, serialist music of the fifties into account as well as the impression of the black/white print could suggest a performance which does not indulge in many contrasting colours. But again, there is no constraint that performances should sound "historic".

[3,0] Roman Haubenstock-Ramati: Interpolation	Labyrinth offering many choices for the first section. Second part offers unlimited choices.	[4,2] Tetsu: Hand Piece	Material is generated from free improvisation and may be subjected to constraints through attempted recallings
[2,3] Karlheinz Stockhausen: Connection (Verbindung)	Second part of the piece prescribes elements to be mixed freely.	[0,2] HR The Nature of the Notes 2	Clear frames are set for the kinds of material / figures to be played, but they leave room for improvising details.
[1,4] Schuback: Panurge	Cycles to be played with some freedoms of choice.	[4,0] Wolff: For 1,2 or 3 People	Even if there are no clefs and many ambiguous symbols, strong sight-reading obligations are placed on the musicians.
[0,2] Rasmussen: The Nature of the Notes 2	Fixed sequence of sections.	[3,0] Roman Haubenstock-Ramati: Interpolation	Optical notation with fixed details.
BORDERLINE CASES		BORDERLINE CASES	
[2,2] Brown 52	Choices appear to be possible within performance of the score in a "systematic manner"	[2,2] Brown 52	Within a given conceptual framework, details may be carried out freely.
[0,2] Davis	As presented by Davis and his band, there seems to be no practise for influencing the formal arrangement during performance.	[0,2] Davis	There is considerable freedom in the details within formal and harmonic requirements, depending on training and place in the hierarchy.

Table: Overview of examples

After analysis of those works placed as "borderline cases", it appeared that Brown was less problematic than first assumed. While descriptions of how to perform the piece are highly ambiguous, they were found to lead to results that could then be defined in outline. Since the final performing plan relies on the performer, an estimate of relevant RABR degrees had to be employed with some ambiguity. Investigating Davis revealed that the piece could only undergo this kind of analysis with certain reservations. This will be discussed further in the concluding section.

The works exemplify all degrees of both RA and BR, except degree 1 of BR. For illustration of this, an instance could be found in Hans Werner Henze's El Cimarron which uses an ensemble with a singing and

reciting soloist. Part of the material is described as "improvised passage suggested by the curve". These curves have often vivid movements, and observed closely, many details must be followed in proportion to the time limit. They may last 10 seconds or less. In this way the sight-reading obligation is considerable, yet there is markedly more room for spontaneous impulses during performance than when following traditional notation. On the other hand, the situation is much more fixed than in the BR 2 Rasmussen and Tetsu examples above. One additional example of BR 1 could be playing of jazz standard melodies (not free solos as in the Davis examples) which allow for some free variation and embellishment.

New developments in notation were crucial in the development of the "classical avantgarde". Notation devices offering degrees of BR 2 and higher are much more diverse and versatile than the present small gallery may suggest²⁹.

DISCUSSION AND CONCLUSIONS

The two axis in RABR analysis, Random Access and Broadness and the degrees they can assume, have now been illustrated by examples. This should make it possible to gather a concrete idea of how this form of analysis designates the repertoire in question. Being the author, I cannot evaluate the usefulness of the method from the outside, but it does seem to me that some complexity reduction has been achieved in distinguishing between the two kinds of openness and degrees of them.

BR is closely connected to the expansion of musical material into all kinds of sound in classical and jazz avantgarde as well, and the BR perspective in jazz is moreover connected to an unbroken tradition of improvisation. Looking historically from a meta-perspective, one could say that *RA breaks away from fixed narratives*. However, it may be valuable to keep in mind, as Haubenstock-Ramati can remind us, that a "fixed narrative" is only one limited form of music structure - the variation form within the classical tradition also extends back in time and represents diverse elements, each potentially being equally close, or distant, to a central model. *BR breaks away from fixed details* - that is, the tendency in classical music to write "everything" down³⁰. These changes affect what Eco called the "intellectual authority" of the composer.

The performance focus within music research is still a new one when connected to music works having a composer³¹. Works may be "flexible" in ways that do not affect performance³², and, to be sure, RABR

²⁹ See Bergstrøm-Nielsen ((2002ffA and (2002ffB), categories E1 and E2, for lists of literature providing examples.

³⁰ Eco 1989 also points out that learned reading practise could involve a "polyphonic" juxtaposition of different points of view, such as literal, moral, allegorical and analogical (p.5) - an openness to possible different meanings of the text.

³¹ Some important works are Müller (1994) and Storesund (2017). See also the category G3.1 in Bergstroem-Nielsen

aspects do not exist in isolation. Yet updates seem inevitable as to recognising the creative role of the musician, especially within "classical" avantgarde - not least in order to let a historical heritage come alive by combining the insights and virtuosity of composer as well as performer roles, even if more persons start to mix these roles. Research of free improvisation is a great advance, but cannot stand alone, if the resources of Western experimental improvisation is to be thrown light at in a comprehensive way.

The RABR analysis proceeds chiefly from an eclectic performer's view, focusing not only on what the musician can do for the composer, but also on what the composer can do for the musician! Choices may depend on habits, training and, maybe not least, on the moment's need for fresh inspiration. Classical musicians wishing for guidance can for instance keep to the low degrees especially of BR, and improvisors who will only now and then accept to play a pre-conceived piece at all also have good chances with high BR values, avoiding what they might feel as "invasive" in Fell's terms.

Overviewing several dimensions was a primary idea for the RABR method. When both kinds of openness are present, there is a place for the "creative co-creator" in Gresser's term³³. However, works without segmentation can have a BR value assigned and co-influence on structure may very well exist even if not measurable by an RA approach. And works with fixed details can be assigned a RA degree. Examples can be seen as starting-points for further orientation into the RABR perspective. One cannot of course generalise from them to the total production of their authors or conclude that those mentioned are more important than others.

Which are the limitations of this analysis form? The method was inspired from "classical avantgarde" and based on properties which have been important parts of its development - so important that they can now be generalised as dimensions. These dimensions embody ideals of equality in creative production and of performers being able to make radical choices. This set of notions may in principle differ highly from those of jazz musicians, or of other orally based traditions. As we have seen, there were reservations concerning Davis, not out of a lack of BR aspect, but because both training and musicians' place in a hierarchy and its relatively fixed roles mattered³⁴. This applies to much jazz and other popular music forms and must be taken into account. It is imaginable, however, that RA also could occur in free versions of a piece like the one analysed, determining solos during performance by cueing or simply by musical action.

Apart from the determination of RA and BR numbers, *further matters may be described for additional clarification:*

- Are there few or many RA elements to choose from? This does not affect the degree of RA, but the

(202ffB).

³² Cf. the mutations observed through the different versions of "So What", cf. the various uses of improvisation described by Polaschegg (2007) and not least how musicians may take over part of the composers' job (Porfiriadis 2016).

³³ See above in the second section about backgrounds of the RABR method.

³⁴ The training aspect in sight-reading also matters much in Wolff's For 1, 2 or 3 people.

situation may feel different for the performer. The more elements, the more specification of possible choices - cf. the analysis of Wolff: Stones and Tetsu with very few elements - and Wolff: For 1, 2 or 3 people with many elements.

- How long or short time spans are associated with BR and is the context of other tasks complex or simple?

The shorter the time span and the more complexity, the more the openness can feel limited for the performer - compare for instance Wolff: For 1 2 or 3 people with Schuback's piece.

- To which degree does a set of RABR numbers express an average - in other words, how homogenous or heterogenous are these two kinds of openness during the performance process and through possible different versions, as observed in the Stockhausen, Haubenstock-Ramati, Tetsu, Davis and Brown examples?

- If the work requires arranging or decision-taking prior to performance: how do choices taken narrow down or expand the degrees as observed in the example of Davis and Brown?

How accurate and accessible is the method? It is based on individual assessment, although informed by comparative insight. Assessment appears not to be a simple task, it requires a thorough understanding of the work's functioning, all relevant circumstances for possible version should be taken into account for the analysis, and some further comments may supplement the number assignment. There can be no full objectiveness, as criteria cannot be fully exact and works may present highly individual properties, and as decisions may have to be taken regarding how to understand the directions of a work. It can provide orientation, indicate whether much or little and in which respect a work is open.

RABR places its systematic focus exclusively on performance and its co-creative opportunities, keeping its focus on what happens in real time. Being two-dimensional and operational, it goes beyond vague concepts like "freedom", "openness" etc. and attempts to make possible an outlook which can be both comprehensive and specific as required, whether one searches as a performer or a researcher.

REFERENCES:

Bergstrøm-Nielsen, Carl (1997): Festlegen, Umreissen, Andeuten, Hervorrufen: Analytisches zu den Textkompositionen Stockhausens. Research Database of Aalborg University (VBN).

<http://vbn.aau.dk/da/publications/festlegen-umreissen-andeuten-hervorrufen%28421574e0-9c2f-11db-8ed6-000ea68e967b%29.html> Accessed 18.March 2015. Also in: MusikTexte 72, 1997.

Bergstrøm-Nielsen, Carl (1998): Sprog som musikalsk notation: en undersøgelse af verbal notation og dens forudsætninger med særligt henblik på Stockhausens *Aus den Sieben Tagen* og *Für kommende Zeiten*.

Research Database of Aalborg University (VBN).

<http://vbn.aau.dk/da/publications/sprog-som-musikalsk-notation%287ca6b780-002d-11da-b4d5-000ea68e967b%29.html> Accessed 18.March 2015.

Bergstrøm-Nielsen, Carl (2002ffA): Experimental improvisation practise and notation 1945-2000. An annotated bibliography. Research Database of Aalborg University (VBN).

<http://vbn.aau.dk/da/publications/experimental-improvisation-practise-and-notation-19451999-an-annotated-bibliography-2002f-pdf-edition%282055da50-2fac-11dc-b148-000ea68e967b%29.html> Accessed 18.March 2015.

Bergstrøm-Nielsen, Carl (2002ffB): Experimental improvisation practise and notation. Addenda 2000-

<http://vbn.aau.dk/en/publications/experimental-improvisation-practise-and-notation-addenda-2000%281225daa0-2f1d-11dc-b148-000ea68e967b%29.html> Accessed 18.March 2015.

Bergstrøm-Nielsen, Carl (2006): *FIXING/CIRCUMSCRIBING/SUGGESTING/EVOKING*. An analysis of Stockhausen's text pieces. Research Database of Aalborg University (VBN).

<http://vbn.aau.dk/en/publications/fixingcircumscribingsuggestingevoking%282e318230-4b47-11dc-a457-000ea68e967b%29.html> Accessed 18.March 2015.

Bergstrøm-Nielsen, Carl (2008): The picnic principle. How improvisors co-ordinate their playing of consecutive sections in open Compositions. www.intuitivemusic.dk/intuitive/08picnic.htm Accessed 9.June 2017.

Blumröder, Christoph von (1993): *Die Grundlegung der Musik Karlheinz Stockhausens*. Stuttgart (Franz Steiner Verlag) .

Bosseur, Dominique et Jean-Yves (1999): *Revolutions Musicales* (1979). La musique contemporaine depuis 1945. Préface de Francois Aubral. Cinquième édition revue et complétée. Paris (Editions Le Sycomore).

Brindle, Reginald Smith (1986): *The New Music: The Avant-garde since 1945* (1975). Sec.ed. Oxford (Oxford University Press).

Cage, John (1969): *Silence*. Middletown, Connecticut (Wesleyan University Press)

Chase, Stephen; Thomas, Philip (ed.) (2010): *Changing the System: The Music of Christian Wolff*. (Ashgate Publishing).

Cox, Christoph; Warner, Daniel (ed) (2004): *Audio Culture: readings in modern music*, USA (Continuum).

Digibib (2015), accessed 4.September 2015: www.digibib.net and searching title (jeux 6) and author (haubenstock-ramati), including both German and International libraries.

Discogs (2016): <https://www.discogs.com/Miles-Davis-Kind-Of-Blue/master/5460> Accessed 6.December 2016.

Eco, Umberto (1989): *The Open Work* (1962), [Cambridge] (Harvard University Press)

Feisst, Sabine (1997): *Der Begriff 'Improvisation' in der neuen Musik* (Diss., Berlin, Freie Universität 1995). Sinzig (Studio, Verlag Schewe). (= Berliner Musik Studien 14).

Fell, Simon H. (1998): *Report On The Composition Of Improvised Music No. 4*
http://intuitivemusic.dk/iima/shf_rep4.htm Accessed 3.March 2015.

Gresser, Clemens (2010): "Prose Collection. The performer and listener as a co-creator", in Chase, T.S; Thomas, Thilip (ed): *Changing the system. The music of Christian Wolff* (Ashgate Publishing)

Gronemeyer, Gisela; Oehlschlägel, Reinhard (hrsg.) (1998): *Christian Wolff. Cues. Writings and Conversations / Hinweise. Schriften und Gespräche*. Köln (Edition MusikTexte 005).

Haubenstock-Ramati, Roman (1965): "Notation - Material und Form", in: Thomas, Ernst: *Notation neuer Musik*. Mainz (Schott). =Darmstädter Beiträge 9:51-54.

Jahn, Hans-Peter (2006): "Zur Qualität des Gedächtnisverlusts. Fesseln der Notation", *MusikTexte* 109, Mai.

Kohl, Jerome (1981): "Serial determinism and "intuitive music"", in: *Serial and Non-Serial Techniques in the Music of Karlheinz Stockhausen from 1962–1968* (Seattle: University of Washington), pp.227-52.

Also online at International Improvised Music Archive:

http://intuitivemusic.dk/iima/jk_7t.htm Accessed 18.March 2015.

Maconie, Robin (1976): "Aus den sieben Tagen" + "Für Kommende Zeiten", *The Works of Karlheinz Stockhausen*, p.250-261. London, 1976

Maconie, Robin (ed.) (1989): "Intuitive music" (1971), *Stockhausen on Music. Lectures and interviews*. London/NY (Marion Boyars Publishers), 1989.

Meyer-Eppler, Werner (1955): "Statistische und psychologische Klangprobleme". die Reihe 1, Wien (Universal Edition).

Müller, Hermann-Christoph (1994): *Zur Theorie und Praxis indeterminierter Musik. Aufführungspraxis zwischen Experiment und Improvisation*. Regensburg (Gustav Bosse Verlag), 1994. Part of a series: *Kölner Beiträge zur Musikforschung* (Niemöller, Klaus Wolfgang ed.) Band 179.

Nyman, Michael (1999): *Experimental Music. Cage and beyond* (1974). Sec ed. (with a foreword by Brian Eno). Cambridge (Cambridge University Press)

Payne, Maggi (1999): *The Extended Flute*. Booklet to CD NWCR807, Composers Recordings, Inc/CRI and Anthology of Recorded Music, Inc. <http://www.newworldrecords.org/uploads/fileDAQqQ.pdf> . Accessed 22.April 2016.

Polaschegg, Nina (2007): *Verflechtungen. Zur Neubestimmung des Verhältnisses von Komposition und Improvisation*", *MusikTexte* 114, August. English version: *Interweavings. Towards a new view of the relation between composition and improvisation*. International Improvised Music Archive, www.intuitivemusic.dk/iima/np.htm . Downloaded 31.May 2017.

Porfiriadis, Alexis (2016): *Collective Thoughts: a Collaborative Approach To Preparation And Performance Of Open Form Compositions for Groups*. PhD, Bath Spa University, 2016. <http://researchspace.bathspa.ac.uk/9316/> Accessed 17.March 2017

Schwartz, Elliot; Godfrey, Daniel (1993): *Music since 1945. Issues, Material, and Literature*, N.Y.(Schirmer).

Storesund, Else Olsen (2017): *Open Form – An Expanded Performer's Role. A Handbook*. PhD, Bergen University (Norway). <https://www.researchcatalogue.net/view/147680/160205> Accessed 12. January 2017.

Stockhausen, Karlheinz (1963): *Momentform: Neue Beziehungen zwischen Aufführungsdauer, Werkdauer und Moment*. In: *Texte zur Musik*. vol. 1, ed. Schnebel, Dieter. Köln (DuMont), pp. 189-210.

Stockhausen, Karlheinz (1978): aus den Sieben Tagen. 15 kompositionen, Mai 1968. In: Texte zur Musik IV 1970-1977, ed. Blumröder, Christoph von. Köln (Dumont)

Straebel, Volker (1997): Zur Interpretation Neuer Musik. Zwei Gespräche über ausgewählte Werke zwischen Eberhard Blum und Volker Straebel.in: Positionen Nr. 31 und Nr. 32. Internet edition with no page numbers: http://www.straebel.de/praxis/index.html?/praxis/text/t-blum_auf.htm, accessed 25.April 2016.

Sutherland, Roger (1994): New Perspectives in Music. London (Sun TavernFields)

Universal Edition (2015). Online catalogue:

<http://www.universaledition.com/Interpolation-Roman-Haubenstock-Ramati/composers-and-works/composer/291/work/5884> Accessed 25.April 2016.

Universal Edition (2016). Online catalogue, accessed 4.September 2015:

<http://www.universaledition.com/Interpolation-Roman-Haubenstock-Ramati/komponisten-und-werke/komponist/291/werk/5884>

Wikipedia (2015) article "Random Access" http://en.wikipedia.org/wiki/Random_access
Accessed 25.February 2015.

WorldCat (2015). Accessed 4.September 2015:

<http://www.worldcat.org/search?q=ti%3Ajeux+6+au%3Ahaubenstock-ramati&fq=x0%3Amsscr&qt=advanced&dblist=638>

EDITIONS AND RECORDINGS OF PIECES ANALYSED AND REFERRED TO;

Brown, Earle: December 1952 from "Folio". N.Y. (Associated Music Publishers, nr. AMP 96 124-3. Transferred to Music Sales Classical), publ. 1961.

Davis, Miles (1959a): "So what" from LP Kind of Blue (1959), Columbia Records PC 8163 and subsequent reissues. <https://youtu.be/ylXk1LBvIqU> Accessed 12.December 2016.

Miles Davis, tr - John Coltrane, ts - Julian Adderly, as - Bill Evans, pno - Paul Chambers, b - James Cobb, dr.

Davis, Miles (1959b): "Miles Davis & Gil Evans "So What", (The Robert Herridge Theater - recorded from TV), <https://youtu.be/nGvfBNywa3g> Accessed 12.December 2016.

Miles Davis, tr - John Coltrane, s - Wynton Kelly, pno - Paul Chambers, b - James Cobb, dr.

Davis, Miles (1964a): "So What" from "Miles In Tokyo - Miles Davis [Full Album 1969]. LP Miles in Tokyo and subsequent reissues. Miles Davis live in concert. Released 1969 (recorded 14.July 1964). https://youtu.be/PwSE6e1sQ_c Accessed 29. May 2017.

Miles Davis, tr - Sam Rivers, ts - Herbie Hancock, pno - Ron Carter, b - Tony Williams, dr

Davis, Miles (1964b): "So What" from "Miles In Berlin - Miles Davis [Full Album 1964]" LP Miles in Berlin, CBS S 62 976 and subsequent reissues. Recorded 25.September 1964. <https://youtu.be/s8b5i3YGy9c> Accessed 29. May 2017.

Miles Davis, tr - Wayne Shorter, ts - Herbie Hancock, pno - Ron Carter, b - Tony Williams, dr

Davis, Miles/Anonymous (2016): transscription of "So what".

<https://www.pinterest.com/pin/487233253407389503/>, accessed 6.December 2016. No source mentioned (but handwriting could point to an edition of "The Real Book")

Haubenstock-Ramati, Roman (1959): Interpolation. Mobile per flûte (1,2 et 3). Wien (Universal Edition UE 13078) .

Hentze, Hans Werner: El Cimarron. Edition Schott, ED 6327 [1970].

milesdavis.com (2016) Official website with videos. Accessed 6.December.

Rasmussen, Henrik Ehland (2010): The Nature if the Notes 2. For en ensemble of melody instruments. Downloaded 20.October 2016 from www.intuitivemusic.dk/iima/ps.htm

Schuback, Peter (2004): L'Heure du Panurge for ensemble ad lib. Downloaded 20.October 2016 from www.intuitivemusic.dk/iima/ps.htm

Stockhausen, Karlheinz (1968): Connection (Verbindung). In: From the Seven Days (Aus den sieben Tagen), Wien (Universal Edition, UE 14790).

Tetsu, Shiba (estimated 1995): Hand Piece (with Memory Function). Downloaded 20.October 2016 from www.intuitivemusic.dk/iima/sht.htm

Wolff, Christian (1964): For 1, 2 or 3 people. Edition Peters, EP 6822.

Wolff, Christian (1969): Stones . Part of Prose Collection, publ. by Frog Peak,
http://www.frogpeak.org/unbound/wolff/wolff_prose_collection.pdf. Downloaded 4.May 2015.
